Affordable Mosaic Housing: Rethinking Low-Cost Housing

Mazlin Ghazali¹ and Anniz Fazli Ibrahim Bajunid²

¹Arkitek M. Ghazali,
²Department of Architecture, Faculty of Architecture, Planning and Surveying,
Universiti Teknologi MARA, Shah Alam, MALAYSIA.
¹tessellar@gmail.com, ²toanniz@gmail.com

ABSTRACT

The very term "Low-Cost Housing" assumes that the challenge is to find innovative ways to reduce the cost of building houses and in doing so, making it affordable for every family to own, regardless of their income level. The problem is seen primarily with an engineering solution - of how to mass produce houses as low-cost as possible. In this paper, the problem is seen through another perspective, a social standpoint. From this point of view, it becomes obvious that placement and concentrating families of the poor - financially and socially stressed - in one location, does not make sense. The higher the concentration of people in these low-cost housing areas, the more unmanageable the social problems become. The Affordable Mosaic Housing concept is an alternative to the present Low-Cost Housing paradigm. This model of cluster houses and clustered neighbourhoods aims to produce better social, environmental and aesthetic environments, by using land more efficiently with fewer roads.

Keywords: Mosaic Layout, Low-Cost Housing, Courtyards, Affordable Alternative Housing

1.0 INTRODUCTION & CURRENT ISSUES

"Not houses finely roofed nor the stones of walls well built nor canals nor dockyards make the city, but men able to use their opportunity." - Alcaeus 600BC

1.1 Low-cost housing in Malaysia

In Malaysia the provision of low-cost houses is shared between the public and private sector. In the 80’s the public sector housing is undertaken by Government agencies like the State Economic Development Corporations. The private sector undertook the construction of low-cost houses through a rule that required housing developers to have 30% of what they build to be low-cost houses (Hooi, 2008). In the 80’s and 90’s (until at least 1998), the private sector outperformed the public sector.

The low-cost houses built by the private sector were for sale to the lower income group. The idea was to democratise home ownership. The price was initially set at RM25,000 as illustrated in Figure 1. This amount has been increased through the years. Yet, there are clearly problems in the delivery of low-cost houses in the new millennium.

1.2 Problems for developers

Subsidised low-cost houses are subject to a ceiling price much lower than their construction cost. Developers pay for this shortfall by putting higher prices on the other houses that they sell. Hooi (Hooi, 2008) claims that private developers are unable to cope with rising construction costs. And with the price of low-cost houses is still capped at a maximum of RM42,000 per unit, the developers are forced to subsidise between RM18,000 and RM28,000 per unit. You would expect demand for these low-cost houses to be high. Yet, there are many completed low-cost houses which have yet to find buyers.
<table>
<thead>
<tr>
<th>Unit Price</th>
<th>Location (land cost)</th>
<th>Income Group</th>
<th>House type</th>
</tr>
</thead>
<tbody>
<tr>
<td>RM 25,000</td>
<td>Cities and big towns</td>
<td>RM1,200 to RM1,500</td>
<td>High rise Flats</td>
</tr>
<tr>
<td>RM 35,000</td>
<td>Big towns and suburbs</td>
<td>RM1,000 to RM1,350</td>
<td>5 storey Flats</td>
</tr>
<tr>
<td>RM 30,000</td>
<td>Small towns</td>
<td>RM850 to RM1,200</td>
<td>Terrace and cluster houses</td>
</tr>
<tr>
<td>RM 42,000</td>
<td>Rural areas</td>
<td>RM750 to RM1,000</td>
<td>Terrace and cluster houses</td>
</tr>
</tbody>
</table>

*Source: (Agus, 2001)*

**Figure 1:** Low-cost ceiling prices (revised in 1998).

1.3 Overhang in the supply of low-cost houses

‘Overhang’ refers to completed properties issued with Certificate of Fitness for Occupation and unsold for more than nine months ("Hung Up On Residential Property," 2006). There has been a persistent overhang in the supply of low-cost houses since the 1997 recession (*Figure 2*). Developers lose money on low-cost housing even when they are fully sold. Where the units cannot be sold, the effect on the developer’s cash flow and bottom line can be catastrophic.

<table>
<thead>
<tr>
<th>Year</th>
<th>Value</th>
<th>No of units</th>
<th>2-3 storey terraced houses</th>
<th>Condominiums and apartments</th>
<th>Single storey terraced Houses</th>
<th>Flats</th>
<th>Low cost Flats</th>
<th>Low cost houses</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>RM1.82 billion</td>
<td>15558</td>
<td>5074</td>
<td>4474</td>
<td>3142</td>
<td>1728</td>
<td>1800</td>
<td>1126</td>
</tr>
<tr>
<td>2005</td>
<td>RM2.65 billion</td>
<td>19577</td>
<td>5074</td>
<td>4474</td>
<td>3142</td>
<td>1728</td>
<td>1800</td>
<td>1126</td>
</tr>
</tbody>
</table>

*Source: Extracted and tabulated from ("Hung Up On Residential Property," 2006)*

**Figure 2:** The Sun, “Hung up on residential property”, 28-Apr-2006, citing The Property Market Status Report recently released by the National Property Information Centre (NAPIC) of the Valuation & Property Services Department.

1.4 Problem for buyers - low resale value

The effects of ‘overhang’ are not limited to only developers, but buyers of low-cost houses have also suffered. Especially many of those that have encountered financial hardships and have had their mortgages foreclosed. A cursory study of Auction Notices over the past year has revealed that the Reserve Prices of low-cost flats in locations like Bukit Sentosa, Rawang in the north of Kuala Lumpur is around RM9,000, a small fraction of the original selling price, perhaps even lower than the cost of demolishing? (*Figure 3*) As a result, to many unfortunate citizens, their low-cost houses are not the expected appreciating assets that can help lift them out of poverty. In fact, the low-cost houses now have become a further financial burden to an already complex predicament.
1.5 Problems for house buyers

The burden of dysfunctional low-cost housing policies continues to effect developers and buyers alike and it is further extended to the general house buying public. The responsibility of providing low-cost houses by private developers is often described as the developer carrying out his social responsibility. But it is a mistake to say that developers subsidise low-cost houses out of his profit. Low-cost houses are actually cross-subsidised by taxing other types of houses. Where the requirement is that 30% of houses have to be low-cost, developers find it easier to cross-subsidise by building higher cost units.

It is easier to raise the money to subsidise three units of low-cost houses (at RM 25,000 per unit) from ten units of RM250,000 super-link houses than from ten units of terrace houses priced at RM150,000. In this way, the 30% low-cost requirement becomes a regressive tax. The net effect is that, with the 30% requirement in place, developers are discouraged from delivering housing in the price categories just above that of the low-cost houses. Thus, a significant segment of the population is deprived of affordable homes.

State governments have however recognised this problem. One response has been to designate a range of lower cost housing. For instance Johor and Selangor have modified requirements for low-medium and medium-cost houses as shown in Figure 4. Nevertheless, the distorting effect on the supply of housing priced just higher than the regulated types still remains.

<table>
<thead>
<tr>
<th></th>
<th>Low Cost</th>
<th>Low-Medium Cost</th>
<th>Medium Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Johor</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price Range</td>
<td>RM25000 to RM42000</td>
<td>RM60000</td>
<td>RM80000</td>
</tr>
<tr>
<td>Percentage of Total no of houses</td>
<td>20%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Selangor</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price Range</td>
<td>RM35000 to RM42000</td>
<td>RM65000 to RM72000</td>
<td>RM80000 to RM90000</td>
</tr>
<tr>
<td>Percentage of Total no of houses</td>
<td>20%</td>
<td>10%</td>
<td>10%</td>
</tr>
</tbody>
</table>

(Source: Author, Arkitek M. Ghazali)

**Figure 4:** Modifications to low-cost and medium-cost requirements in Selangor and Johor.
2.0 METHODOLOGY, IMPLEMENTATION & RESULTS

2.1 Creating Value

This paper looks at the problems of low-cost housing from a town planning perspective and proposes how we can improve the design of the layout of new housing developments. The low-cost housing policy that should be addressed here is not primarily about providing shelter to the poor, but it is about home ownership and building equities as well. The first notion of implementation is to recognise that low-cost houses must represent good value. Any valuation expert would identify the three most important factors that determine value would be, ‘Location, location, location’. A study based on a low-cost, low-medium cost and medium-cost project in Kajang, provides a good illustration in what is meant by ‘location’ (Sabri et al., 2006).

2.2 Taman Sutera

It is common practice to build low-cost, low-medium and medium cost units in separate blocks. In this particular instance, the firm, Arkitek M. Ghazali managed to persuade the client and the local authorities to allow for the three categories to be mixed in any one block. It was also agreed that the higher priced units were positioned on the lower floors and lower priced units placed on the higher floors. What was achieved was low-medium cost units mixed with medium cost units in the same 5 storey block. The low-cost units however, had to be placed in its own block and no units were allowed to be positioned on the ground floor, thus the flats were 6-storeys high (Figure 5 & 6).

![Figure 5: Low-medium cost units mixed with medium cost units shown (left) while the low-cost units were placed in its own 6-storey block (right).](Source: Author, Arkitek M. Ghazali)

![Figure 6: The division of low-medium cost units and medium cost units mixed within one block.](Source: Author, Arkitek M. Ghazali)
The units were generally launched for sale block by block. The developers would take bookings from the prospective purchasers who were required to come back within a fixed period of time to sign the SPA and make the first 10% payment. For this particular research, the date of the signing of the SPA was taken as the date of sale. The data was sorted out by blocks and by floors as shown in Figure 7. For every floor of each block, the average day it took to sell each unit was calculated. It can be easily seen in Figure 8 that the higher priced low-medium cost and medium cost units sold much faster than the low-cost units.

<table>
<thead>
<tr>
<th>Block</th>
<th>Ground</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
<th>Fourth</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>RM 77,922.14</td>
<td>RM 80,046.25</td>
<td>RM 77,564.00</td>
<td>RM 69,225.00</td>
<td>RM 64,697.50</td>
</tr>
<tr>
<td>B</td>
<td>RM 72,307.50</td>
<td>RM 77,221.25</td>
<td>RM 75,834.75</td>
<td>RM 71,040.00</td>
<td>RM 61,852.00</td>
</tr>
<tr>
<td>C</td>
<td>RM 75,412.31</td>
<td>RM 78,372.50</td>
<td>RM 76,051.88</td>
<td>RM 70,876.63</td>
<td>RM 61,501.25</td>
</tr>
<tr>
<td>D</td>
<td>RM 74,167.50</td>
<td>RM 78,933.75</td>
<td>RM 78,138.75</td>
<td>RM 70,417.63</td>
<td>RM 64,134.24</td>
</tr>
<tr>
<td>E</td>
<td>RM 74,876.25</td>
<td>RM 78,505.00</td>
<td>RM 76,747.50</td>
<td>RM 68,820.00</td>
<td>RM 62,642.5</td>
</tr>
</tbody>
</table>

Average: RM 74,937.14 RM 78,615.75 RM 76,867.38 RM 70,075.85 RM 62,965.50

(Source: Author, Arkitek M. Ghazali)

**Figure 7:** Price range of low-medium cost units and medium cost units within separate blocks and different floors.

<table>
<thead>
<tr>
<th>Floor</th>
<th>Average no. of Days It Took To Sell Off Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>Low-Medium Cost / Medium Cost</td>
</tr>
<tr>
<td>Price</td>
<td>RM60,000 to RM80,000</td>
</tr>
<tr>
<td>Built up area</td>
<td>771 – 850sf</td>
</tr>
<tr>
<td>Ground Floor</td>
<td>36</td>
</tr>
<tr>
<td>First Floor</td>
<td>57</td>
</tr>
<tr>
<td>Second Floor</td>
<td>117</td>
</tr>
<tr>
<td>Third Floor</td>
<td>167</td>
</tr>
<tr>
<td>Fourth Floor</td>
<td>190</td>
</tr>
<tr>
<td>Fifth Floor</td>
<td>non</td>
</tr>
</tbody>
</table>

(Source: Author, Arkitek M. Ghazali)

**Figure 8:** The duration to sell the low-cost units clearly more than doubled that of higher priced low-medium cost and medium cost units.

2.3 The importance of the social environment factor

Physically, there were not many differences between the low-cost, low-medium cost and medium cost units. The finishes were basically specified all the same. The low-cost units have separate water closet and shower, whilst the other units have two bathrooms. All the house types use louvre windows. The low-cost unit was just 24% smaller than the biggest medium cost unit. Yet the low-cost houses were half the price of the biggest unit. The site for the low-cost flats was also just next to the low-medium and medium cost flats. There was also no difference in the density (in terms of units per acre) between the two. There was not much difference in the specifications of the external areas either. Surely, the low-cost units should have sold quicker or at least faster than the more expensive units. Unfortunately, this was not the expected result. There may be many other factors to consider but this study clearly illustrates the importance of the social environment. We can surmise that users prefer living in mixed-income communities.
rather than living in an all units low-income community. Not surprisingly, low-cost housing has acquired that fateful social stigma of “low-cost housing is for low-class people”.

3.0 PROPOSALS AND DISCUSSIONS

3.1 Location, location, location
This paper puts forth that there are at least three aspects to location. The first obvious aspect is that of geographical location. A house close to the city centre is sure to be more valuable than one that is very far away. But in reality, it is more complicated than that. The second aspect is the physical quality of the environment around the house. A house in a quiet leafy cul-de-sac will undoubtedly be more valued than one on an untidy, noisy street. And the third aspect is the social quality of the environment. This would include the sense of belonging that residents feel to their neighbourhood community. As the Taman Sutera study reveals, the importance of the social aspect should not be underestimated. Consequently, the remainder of the implemented proposals below (currently in planning stage and on-site) addresses these issues.

3.2 Cluster layout
The idea of cluster houses clustered around courtyards in a cul-de-sac arrangement (Ghazali & Davis, 2004) in Figure 9 has since then been developed into a rectilinear version of the hexagonal form of Honeycomb Housing, which is more ideally suitable for the more affordable end of the market.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure9.png}
\caption{Early developments of clustered houses around courtyards in culs-de-sac.}
\end{figure}

3.3 Courtyard neighbourhood
The Mosaic layout is created by arranging courtyards, such that each building would face at least two courtyards (Figure 10). The buildings are then sub-divided into 2, 3 or 4, to create duplexes, triplexes or quadruplexes, or even into 8 townhouse units. The basis of the subdivided buildings and land area allows for the creation of smaller built-up units, thus making the houses more affordable. But the essence of this method of organisation is that more units are created without compromising the quality of the external environment.
3.4 Community friendly

Compared to the terrace house layout, the Mosaic layout is more community-friendly with houses clustered around small parks, like friends sitting around a table where residents can recognise the small number of neighbours and thus, better able to deal with ‘stranger danger’. Safer streets are created by minimising cross-junctions and traffic speed is reduced by the unique road patterns. The pattern also creates child-friendly pocket parks, suitable for pre-school children’s outdoor play and communal activities with many ‘eyes on the street’ (Figure 11).

3.5 Environment friendly

The Mosaic layout promotes environmental-friendly spaces to plant giant shady trees increasing efforts to cool outdoor temperature (urban heat island effect) whilst still friendly towards insects, birds and small animals on flat land as well as undulating land (Figure 12). In this way, it also saves development cost by achieving better land-use efficiency with fewer roads thereby reducing infrastructure cost (Ghazali, Sia, Chan, Foo, & Davis, 2005).
3.6 Efficient use of land

In terms of land-use efficiency, the Mosaic layout compares well against the typical terrace house layout. The density is only marginally lower whilst the average size of units is larger by a quarter (Ghazali, et al., 2005). This is achieved by the large reduction in area required for road reserves as seen in Figure 13.

<table>
<thead>
<tr>
<th>TERRACE</th>
<th>MOSAIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road</td>
<td>46.6%</td>
</tr>
<tr>
<td>Saleable land</td>
<td>43.2%</td>
</tr>
<tr>
<td>Green area</td>
<td>10.3%</td>
</tr>
<tr>
<td>No of units/acre</td>
<td>15.9 Units</td>
</tr>
<tr>
<td>Average size of lots</td>
<td>1180sf</td>
</tr>
</tbody>
</table>

(Source: Author, Arkitek M. Ghazali)
3.7 Rethinking housing layout design

Malaysian town planning practice owes much to the town planning ideas of the early 20th century. The control of density and land-use through zoning, the hierarchy of roads, neighbourhood units and the importance of green open space and communal facilities are ideas strongly entrenched among both the private and government sector planners and can be seen in local planning guidelines. In developing the Mosaic concept into a complete neighbourhood layout, we questioned two ideas deeply entrenched in town planning. The first is to rethink the idea of ‘neighbourhood’. The second is about ‘zoning’.

3.8 Neighbourhood and community

Clarence Perry’s ‘Neighbourhood Unit’ population of about 3,000 to 10,000 residents would have its own elementary (primary) school of about 1000-1600 children. (Perry, 1929) The school, along with other communal facilities like a hall, library and religious building would be centrally located. The neighbourhood would be ringed by arterial roads. The arterial road was designed to discourage through traffic into the residential neighbourhood and to also give a distinct boundary to the neighbourhood. The shopping area would be at the periphery of the neighbourhood, along the arterial road. There should be a system of small parks and recreation areas to serve the children and youth. He suggested 10% of the total area to be a reasonably good provision. The roads within the neighbourhood would be the small local roads in front of the houses and collector roads that join the local roads to the arterial roads.

There has been confusion with both the words ‘neighbourhood’ and ‘community’ having different meanings of a social and physical nature. Developers routinely use the word ‘community’ to mean housing estate. Perry introduced the concept of neighbourhood unit in the 1920’s in New York with a list of physical planning characteristics that could encourage city folk to develop a common sense of belonging, a ‘neighbourhood’. But does it really work?

3.9 Neighbourhood - social rather than physical

A neighbourhood should not be understood in terms of a list of ingredients in a recipe, but rather whether residents actually feel the sense belonging to a neighbourhood and act accordingly to that perception. To measure these aspects, we need to look at the quantity and quality of social interaction, mutual cooperation between neighbours, positive feelings towards neighbours (without necessarily having social contact), influence, membership and sense of place and belonging.

Mosaic housing is premised on the hypothesis that residents who live in small neighbourhoods are more likely to recognise, get to know, interact and form social groups than those who live in bigger neighbourhoods. This was highlighted by Bajunid on Dunbar (Bajunid & Ibrahim, 2007) that a figure of not more than 150 seems to represent the expected maximum number of individuals with whom we can have a genuine social relationship.

3.10 Alternative Concept of Neighbourhood

Mosaic housing adopts a hierarchical concept of neighbourhood. A family may belong simultaneously to a ‘courtyard neighbourhood’ (<16 houses), a ‘cul-de-sac neighbourhood’ (<42 houses), a ‘block neighbourhood’ (<250) and a ‘town community’ of around 1500 houses. The latter is what corresponds most closely to Perry’s neighbourhood unit.

However, arguably, it is at the level of the ‘courtyard neighbourhood’ that the sense of neighbourhood would be strongest; a cluster of 16 houses with a population of only 80 is a setting where residents can easily relate to each other. It is also the findings of Associate Professor DR. Asiah Abdul Rahim in her book ‘Housing from the Islamic Perspective’ (Rahim, 2008) that a neighbourhood should comprise not more than 40 houses, which is equivalent to a ‘cul-de-sac neighbourhood’.
3.11 Defensible Space

The ‘Defensible Space’ concept by architect Oscar Newman in the 1970’s (Newman, 1972), proposed that housing layouts produces a hierarchy of private space, semi-private space and public space (Figure 14). In this way residents are able to exercise influence over the environment just outside their homes by identifying visitors when they enter their semi-private domain. The Mosaic design assists in providing natural surveillance of the external spaces whereby every house lies in a cul-de-sac, which naturally produces defensible spaces.

![Figure 14: Interpretation of Defensible Space within the Mosaic layout culs-de-sac.](Source: Author, Arkitek M. Ghazali)

3.12 Zoning

Ebenezer Howard’s vision of Garden Cities has industrial, commercial and residential uses neatly segregated from each other (Howard, 1902). The Garden City consists different zones, street types and greeneries. The core at the centre contains a central park, surrounded by commercial, cultural and administrative zones. Six boulevards connect the centre with a circumference, which are then overlayed by ring roads around the centre, forming the residential neighbourhoods (Figure 15). The outer ring is identified for small scale industries and manufactories to keep inhabitants away from emissions, a green belt and a circle railway marks the border to the countryside.

![Figure 15: Ebenezer’s Garden City zoning.](Source: Author, Arkitek M. Ghazali)
3.13 Functional zoning to residential zoning by density and house type

The sorting out of the city into separate functions - industrial, commercial and residential was a natural reaction to the squalor of Victorian cities. The concept of zoning is entrenched in Malaysia’s laws on land and planning. However, town planning practice has gone on to segregate high density housing from medium density and from low density housing. This logic has taken on a life of its own – there is something that compels 22'X 70' double storey terrace houses to be separated from 20'X 65' terrace houses. Functional zoning has evolved into zoning by house types.

Planners seem oblivious to this fact that this was, in practice, segregating society by wealth. After apportioning the land for the upper and middle classes, the worst bit of land left over would be given over to low-cost housing. This again, emphasizes that unfortunate stigma in urban areas – low-cost houses for low-class people.

4.0 CONCLUSION

4.1 Left over space for low cost housing

Low-cost housing not only loses money, they also depress the value of properties adjacent to them. In this effect, developers choose the worst section of their land for them - bits of land that might need more piling and more expensive infrastructure, or low lying land right next to the oxidation pond that needs extensive earthworks. These extra costs become a burden on the budget for the construction of the actual homes.

The low-cost areas are also often isolated from other types of housing. So they generally end up being a distance from social amenities - schools, nursery, kindergarten and shops. Isolated, the low-cost housing area offers few employment opportunities. Placed in a far corner of a housing project, they also lack access to cheap transportation. And transport incurs a substantial part of the poor man's income.

However, the worst aspect of low-cost housing projects is the very idea of low-cost housing areas; the public identification of poor people concentrated in one location. Healthy communities have been seen to comprise of a mix of the rich, the poor and the middle income earners. The best examples are our traditional communities or kampongs, which are not made up exclusively of rich or the poor.

In the Mosaic Housing model there is an attempt to avoid segregation by income categories. There is a combination of house types that allows a semi-detached house to be built next to the equivalent of a terrace house and to which would also be walking distance away from a townhouse or a flat. In this model, a small percentage of low-income households would be integrated into a healthy mixed-income community. In this way it is possible to avoid having low-cost houses concentrated in an isolated, unattractive section of a housing development.

REFERENCES


